CLAIMS

We claim:

1. A method, comprising:

partitioning a computer memory into a freeable range and a non-freeable range of operating memory devices, wherein pinned memory is confined to the non-freeable range and the operating memory devices in the freeable range constitute at least the same number of bytes as the operating memory devices in the non-freeable range;

de-allocating at least a portion of the freeable range of memory devices; and

copying the contents of the memory range supported by a memory device that holds pinned memory to at least one de-allocated memory device.

2. The method of claim 1 further comprising re-routing requests destined for the memory device that holds pinned memory to the at least one de-allocated memory device when the contents of the memory range supported by the memory device that holds pinned memory are copied.

3. The method of claim 1 further comprising re-partitioning the memory into a freeable range and a non-freeable range of operating memory devices when contents of the memory range supported by a memory device that holds pinned memory is copied.

4. The method of claim 1 further comprising interleaving the freeable range of operating memory devices when the computer memory is partitioned.

5. The method of claim 1 further comprising interleaving the non-freeable range of operating memory devices when the computer memory is partitioned.

6. The method of claim 1 further comprising detecting whether an operating memory device is failing;

when the failing memory device holds pinned memory, de-allocating at least a portion of the freeable range of memory devices; and

copying the contents of the memory range supported by the failing memory device to at least one de-allocated memory device.

7.   The method of claim 6 wherein detecting whether an operating memory device is failing further comprises accepting at least one parameter indicative of a memory device failure based on a selected criterion for monitoring a memory device; monitoring an operating memory device and generating monitoring data indicative of whether the memory device is in compliance with the selected criterion; and determining whether the selected criterion has been met.

8.   The method of claim 7 wherein the selected criterion is a temperature threshold.

9.   The method of claim 7 wherein the selected criterion is a threshold error rate.

10.   The method of claim 1 wherein de-allocating the freeable range of memory devices comprises issuing, by a software process, a de-allocation request, wherein the de-allocation request identifies the freeable range memory devices; receiving, at an operating system, the de-allocation request and determining whether the requested memory devices may be de-allocated; and issuing, by an operating system process, a determination of whether the requested memory devices may be de-allocated.

11.   The method of claim 1 wherein copying the contents of the memory range supported by a memory device that holds pinned memory to at least one de-allocated memory device further comprises selecting at least one de-allocated memory device suitable in size to replace the memory device that holds pinned memory, wherein the memory device that holds pinned memory is configured to contain a predetermined number of bytes of data.

12.   The method of claim 1 wherein copying the contents of the memory range supported by a memory device that holds pinned memory to at least one de-allocated memory device further comprises remapping an address location for the memory device that

holds pinned memory to an address location for the at least one de-allocated memory device utilized for replacing the memory device that holds pinned memory.

13. A method comprising:

issuing, by the controller process, a partition call to partition a computer memory into a freeable range and a non-freeable range of operating memory devices;

receiving, by the operating system process, the partition call and processing the call to partition the computer memory, wherein pinned memory is confined to the non-freeable range;

issuing, by the controller process, a de-allocation call to de-allocate the freeable range of memory devices;

receiving, by the operating system process, the de-allocation call and processing the call to de-allocate the freeable range of memory devices; and

issuing, by the operating system process, a copying call to copy the memory range supported by a memory device containing pinned memory to at least one de-allocated memory device.

14. The method of claim 13 further comprising issuing, by the controller process, an interleaving call to interleave the freeable range of operating memory devices; and receiving, by the operating system process, the interleaving call and processing the call to interleave the freeable range when the memory range supported by the memory device containing pinned memory is copied to at least one de-allocated memory device.

15. The method of claim 13 further comprising issuing, by the controller process, an interleaving call to interleave the non-freeable range of operating memory devices; and receiving, by the operating system process, the interleaving call and processing the call to interleave the non-freeable range when the memory range supported by the memory device containing pinned memory is copied to at least one de-allocated memory device.

16. The method of claim 13 wherein the memory device containing pinned memory is failing.

17.   The method of claim 13 wherein, collectively, the operating memory devices in the freeable range constitute at least the same number of bytes as the operating memory devices in the non-freeable range.

5   18.   The method of claim 13 wherein the memory devices are DIMMs.

19.   A system comprising:

a partitioning component operable to partition a memory into a freeable range and a non-freeable range of operating memory devices, wherein pinned memory is confined to the
10   non-freeable range; and

a memory controller operable to de-allocate the freeable range of memory devices and copy the memory range supported by a memory device which contains pinned memory to at least one de-allocated memory device.

15   20.   The system of claim 19, wherein the memory controller is further operable to copy the memory range supported by a memory device which contains pinned memory to at least one de-allocated memory device when the memory device which contains pinned memory is failing.

20   21.   The system of claim 19 further comprising an interleaving component operable to interleave the freeable range of operating memory devices when the memory range supported by the memory device which contains pinned memory is copied to at least one de-allocated memory device.

25   22.   The system of claim 19 further comprising an interleaving component operable to interleave the non-freeable range of operating memory devices when the memory range supported by the memory device which contains pinned memory is copied to at least one de-allocated memory device.

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